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EXAMINER

JORDAN, STEPHEN W

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 05/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/827,557	Applicant(s) BARRETTO ET AL.	
	Examiner Stephen Jordan	Art Unit 1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-21 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 9-21 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "means for applying a vacuum at the vacuum pads to attach the substrates to the vacuum pad" invokes 35 U.S.C. 112, 6th paragraph since the three prong test is met. The three prong test is met because the claim uses the phrase "means for", the "means for" is modified by the functional language, "applying a vacuum at the vacuum pads to attach the substrates to the vacuum pad" and the functional language "applying a vacuum at the vacuum pads to attach the substrates to the vacuum pad" is not modified by sufficient structure, material or acts for achieving the specified function. The claim is indefinite because there is no associated apparatus for applying a vacuum in the instant specification. For purposes of examination, the Examiner interprets the limitation "means for applying a vacuum at the vacuum pads to attach the substrates to the vacuum pad" to be any vacuum source that can be attached to the vacuum pads.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 2,355,643 (Grover) in view of US 5,588,797 (Smith). Grover teaches an apparatus for lifting substrates comprising a substrate tray (Grover, figure 2, and page 1, column 1, lines 32-33) with a plurality of depressions (Grover, figure 5, item 11b and page 1, column 2, lines 44-46) and a hole in each depression coupled to the plate (Grover, figure 5, item 11a, and page 1, column 2, lines 39-44), the substrate tray to hold a substrate in each depression (Grover, page 1, column 2, lines 3-19) a plate with a plurality of protrusions (Grover, page 1, column 2, line 20) each of said protrusions extending through a different said hole (Grover, figure 5 and page 1, column 2, line 54 - page 2, column 1, lines 2) and maintaining level or leveling the substrate in the corresponding depression (Grover, figure 5 and page 2, column 1, lines 27-33 wherein orienting the objects includes leveling, as each hole acts as a guide. In an alternate interpretation, level meaning height is achieved because the pins are spaced with substantially mutually parallel axes (Grover, figure 5 and page 2, column 1, lines 37-41) since that makes the tops of the pins planar, or, all the same height) while lifting each substrate concurrently with the other of the plurality of substrates in the other depressions (Grover, figure 5 and page 1, column 2, line 54 - page 2, column 1, lines 2). Grover does not teach a lifting device with a plurality of vacuum pads coupled to the

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substrate tray, the lifting device to attach to the substrates and lift the substrates out of the substrate tray. Grover does not teach a first actuator coupled to the plate, the first actuator to raise and lower the plate. Grover does not teach a second actuator to lower and raise the lifting device. Grover does not teach a means for applying a vacuum at the vacuum pads to attach the substrates to the vacuum pad. Smith teaches a lifting device with a plurality of vacuum pads coupled to the substrate tray, the lifting device to attach to the substrates and lift the substrates out of the substrate tray (Smith, column 2, lines 27-28). Smith teaches a first actuator coupled to the plate (Smith, column 2, lines 13-15, considering the moveable paws to be actuators), the first actuator to raise and lower the plate (Smith, column 2, lines 14-16). Smith teaches a second actuator to lower and raise the lifting device (Smith, column 2, lines 17-18 wherein the second actuator is considered the threaded screws). Smith teaches a means for applying a vacuum at the vacuum pads to attach the substrates to the vacuum pad wherein vacuum suction cups (Smith, column 2, line 27) function in conjunction with vacuum being generated at the interface between valves for controlling vacuum (Smith, column 4, lines 66-67). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the handling system of Grover to utilize the vacuum handling apparatus of Smith in order to place chips on a belt for sequential loading into a tester (Smith, column 2, lines 27-31 and column 1, lines 53-55).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grover and Smith as applied to claim 9 above, and further in view of US 5,785,484 (Garcia). Grover and Smith do not teach a lifting plate with a plurality of flat protrusions. Garcia

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teaches a semiconductor lifting apparatus (Garcia figure 5) comprising a lifting plate (Garcia, figure 5, feature 44) with a plurality of flat, rectangular protrusions (Garcia, figure 5, feature 42 and column 5, lines 19-34). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the handling system of Grover and Smith to utilize the lifting apparatus of Garcia in order to prevent damage to the components (Garcia, column 1, lines 59-60).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grover and Smith as applied to claim 10 above, and further in view of US 5,785,484 (Garcia). Grover and Smith do not teach a lifting plate with a plurality of rectangular protrusions. Garcia teaches a semiconductor lifting apparatus (Garcia figure 5) comprising a lifting plate (Garcia, figure 5, feature 44) with a plurality of flat, rectangular protrusions (Garcia, figure 5, feature 42 and column 5, lines 19-34). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the handling system of Grover and Smith to utilize the lifting apparatus of Garcia in order to prevent damage to the apparatus (Garcia, column 1, lines 59-60).

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grover, Smith and Garcia as applied to claim 10 above, and further in view of US 6,205,745 (Dudderar). Grover, Smith and Garcia do not explicitly teach square cross sectioned protrusions. Dudderar teaches square cross sectioned apertures (Dudderar, figure 11, feature 34 and column 4, lines 49-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the protrusion of Grover, Smith and

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Garcia to utilize the shape of Dudderar in order to fit the opening of a carrier in push through dispensing (Dudderar , column 4, lines 49-50 and line 38).

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grover and Smith as applied to claim 9 above, and further in view of US 6,003,676 (Beyer). Grover and Smith do not teach use of hydraulic actuators. Beyer teaches the use of hydraulic actuators (Beyer, column 7 lines 2-3) in manufacturing carrier tapes for use with surface mount components (Beyer, column 1 lines 12-16). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined lifting apparatus of Grover and Smith to utilize the hydraulic actuators of Beyer in order to facilitate automatic handling (Beyer, column 1 lines 12-16).

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grover and Smith as applied to claim 9 above, and further in view of US 6,003,676 (Beyer). Grover and Smith do not explicitly teach like use of pneumatic actuators. Beyer teaches the use of pneumatic actuators (Beyer, column 7 lines 2-3) in manufacturing carrier tapes for use with surface mount components (Beyer, column 1 lines 12-16). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined lifting apparatus of Grover and Smith to utilize the pneumatic actuators of Beyer in order to facilitate automatic handling (Beyer, column 1 lines 12-16).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grover and Smith as applied to claim 9 above, and further in view of Grover. Grover teaches lifting bodies so as to separate them from the tray. (Grover, page1, column 1, lines 13-16). It would have been obvious to one of ordinary skill in the art at the time of the

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invention to further modify the combined lifting apparatus of Grover and Smith to utilize the lifting and separating process of Grover in order to quickly orient components (Grover, page 1, column 1, lines 7-8)

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grover and Smith as applied to claim 9 above, and further in view of Smith. Smith teaches a third actuator coupled to the lifting device, the third actuator to move the lifting device away from the tray to a different position. (Smith, column 1, line 49 – column 2, line 26 wherein the tray moving device moves away from trays after depositing them in the proper location). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the handling system of Grover to utilize the vacuum handling apparatus of Smith in order to place chips on a belt for sequential loading into a tester (Smith, column 2, lines 27-31 and column 1, lines 53-55).

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grover and Smith as applied to claim 16 above, and further in view of Smith. Smith teaches a third actuator moves the lifting device after the lifting device has been raised back up after lifting substrates from the substrate tray. (Smith, column 1, line 49 – column 2, line 26 wherein the tray moving device moves away from trays after depositing them in the proper location, and the cycle repeats, so the movement away must occur after the lifting device has been raised during some point in the cycle). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the handling system of Grover to utilize the vacuum handling apparatus of Smith in order to

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place chips on a belt for sequential loading into a tester (Smith , column 2, lines 27-31 and column 1, lines 53-55).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grover and Smith as applied to claim 9 above, and further in view of US 6,205,745 (Dudderar). Dudderar teaches a vacuum head for a pick and place machine (Dudderar, column 3 lines 7-9 and column 1 lines 37-44, wherein the vacuum head generates a vacuum at a tip which contacts and retains a chip.) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined lifting apparatus of Grover and Smith to utilize the vacuum generation of Dudderar in order to hold either side of a chip (Dudderar, column 1, lines 37-44).

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,785,484 (Garcia) in view of US 6,205,745 (Dudderar). Garcia teaches an electronic component loading apparatus (Garcia, figure 5, and column 1, lines 14-22), comprising a substrate tray (Garcia, figure 5, feature 138) a lifting plate (Garcia, figure 5, feature 44) with a plurality of protrusions (Garcia, figure 5, feature 42) with a plurality of depressions, (Garcia, figure 5, features 134 within feature 136), with holes (Garcia, figure 5, features 134 within feature 138), a first actuator coupled to the plate to raise and lower the plate (Garcia, figure 5, feature 40) and a system whereby the protrusions are used to contact and lift the components (Garcia, column 4, lines 4-7). Garcia does not teach a flipping device, or a lifting device with vacuum pads. Dudderar teaches a pick and place tool to pick with first and second vacuum heads to invert chips (Dudderar, column 1 lines 49-53), an inverter arm used to pick the die in a usual way,

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i.e. circuit side up, swing the arm of the pick tool through a 180.degree arc, then pick the die with a second pick tool from the first pick tool, this time with the circuit side down (Dudderar, column 1 lines 45-57 describes a station to change the orientation of a chip by rotating it through 180 degrees, effectively flipping it upside down, and switching the side of the chip being grasped to hold the side that is facing up, which is one meaning of a flipping station. The swinging arm is considered a second actuator which raises and lowers the vacuum tip. The vacuum tip is considered a flipping device) and chips are dispensed for solder bonding with solder bumps (Dudderar, column 2 line 65 - column 3 line 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the lifting apparatus of Garcia to utilize the pick and place apparatus of Dudderar in order to transfer chips to other processing stations (Dudderar, column 1 lines 14-15).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Garcia and Dudderar as applied to claim 19 above, and further in view of Dudderar. Dudderar teaches a vacuum head for a pick and place machine (Dudderar, column 3 lines 7-9 and column 1 lines 37-44, wherein the vacuum head generates a vacuum at a tip which contacts and retains a chip.) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the lifting apparatus of Garcia to utilize the pick and place apparatus of Dudderar in order to transfer chips to other processing stations (Dudderar, column 1 lines 14-15).

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Garcia and Dudderar as applied to claim 20 above, and further in view of Dudderar. Dudderar

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teaches a vacuum head for a pick and place machine (Dudderar, column 3 lines 7-9 and column 1 lines 47-65, wherein inverting, or flipping the chip is discussed, and picking and placing the chip in a single operation is stated). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the lifting apparatus of Garcia to utilize the pick and place apparatus of Dudderar in order to transfer chips to other processing stations (Dudderar, column 1 lines 14-15).

Response to Arguments

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., that flipping is defined as a side of the substrate that was formerly resting on the bottom of the tray is changed to face upwards, and that leveling of a substrate needs to be done in a particular manner), are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant's arguments with respect to claim 9 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Jordan whose telephone number is 571-272-0899. The examiner can normally be reached on 9:30-6:30M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SWJ



Jonathan Q.
Primary Examiner

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